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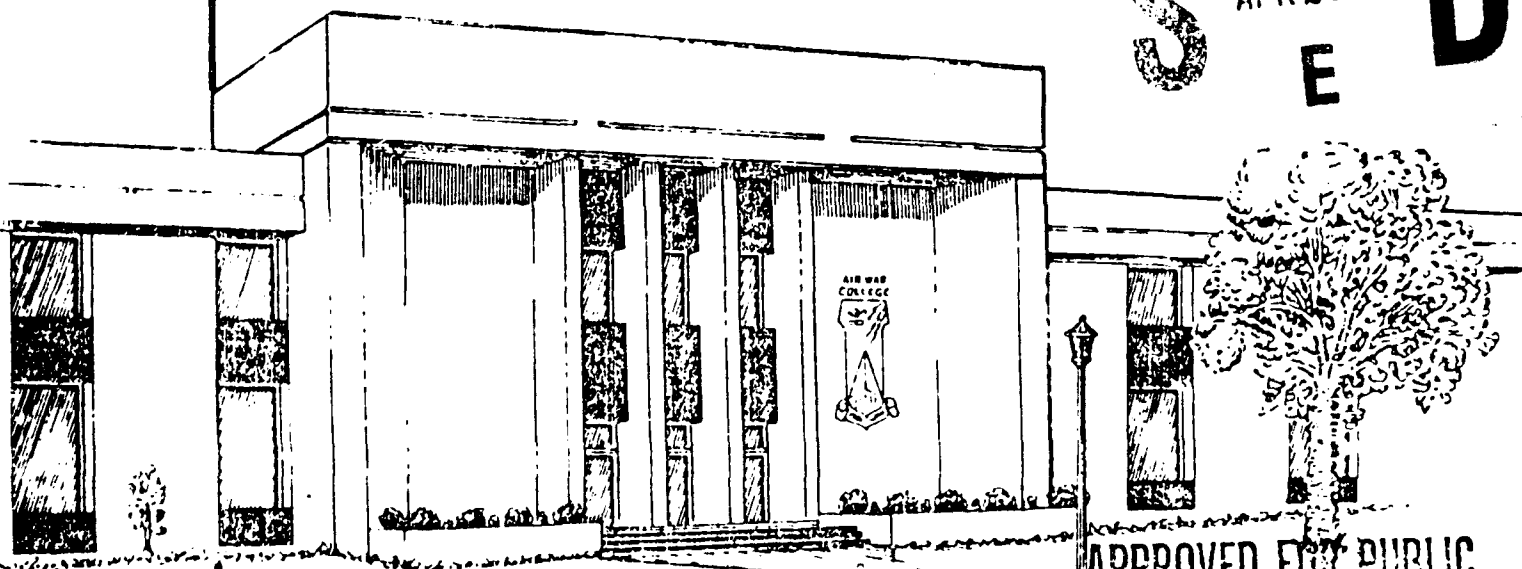
## RESEARCH REPORT

**TOTAL QUALITY MANAGEMENT: PERFORMANCE STANDARDS FOR TODAY'S  
INFORMATION MANAGERS**

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AIR UNIVERSITY  
UNITED STATES AIR FORCE  
MAXWELL AIR FORCE BASE, ALABAMA

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TOTAL QUALITY MANAGEMENT: PERFORMANCE STANDARDS FOR TODAY'S  
INFORMATION MANAGERS

by

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A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY  
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REQUIREMENT

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## EXECUTIVE SUMMARY

**TITLE:** Total Quality Management: Performance Standards For Today's Information Managers. **AUTHOR:** Bernard E. Dee Jr., Lieutenant Colonel, USAF

Information management responsibilities cover a wide range of activities: publishing and systems management programs, correspondence handling procedures, documentation management, travel management and reprographics. Each of these activities is a specific management process for presenting a specific type of information. What is often lacking are measurement standards to assure that this information is the right information, for the right people, at the right time. One aspect of the total quality management concept now being introduced throughout DOD (as espoused by Mr. W. Edwards Deming) encourages the use of specific measurement criteria as a way to measure performance. It's that concept and whether or not it can be applied successfully to the information management field which will be examined here.

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## BIOGRAPHICAL SKETCH

Lieutenant Colonel Bernard E. Dee Jr., (MBA, Chaminade University) is a career administrator. His 19 years of information management experience includes duty assignments at the squadron, group, division, numbered air force and MAJCOM levels. He has also served in 2 special duty assignments: the United States Air Force Academy and the Air Force Reserve Officers Training Corps program. Colonel Dee was most recently selected as Air Force Systems Command Senior Administrator of the Year for 1988. Colonel Dee is a graduate of the Air War College, class of 1990.

## TABLE OF CONTENTS

DISCLAIMER.....	ii
EXECUTIVE SUMMARY.....	iii
BIOGRAPHICAL SKETCH.....	iv
Chapter	
I. INTRODUCTION.....	1
II. TQM PHILOSOPHY.....	3
III. INFORMATION MANAGEMENT & TQM.....	6
Publishing Management.....	8
Reprographics Management.....	10
Travel Management.....	14
Administrative Communications.....	17
Records Management.....	20
Systems Management.....	22
IV. TQM SUPPORTING INITIATIVES.....	24
V. A FINAL NOTE.....	28
LIST OF REFERENCES.....	29

## CHAPTER I

### INTRODUCTION

The Department of Defense (DOD) has adopted the Total Quality Management (TQM) philosophy and the Air Force, has started implementing the program throughout many of its activities. What remains unknown is whether or not it (TQM) will work; work effectively; and work at the lowest common denominator--the field unit. The focus of my paper will be first to examine the basic tenets of TQM and secondly, to determine whether or not these same tenets can be used and used effectively by today's information managers.

The one idea that ties all elements of TQM together is the belief that until top management gets personally involved in quality, nothing will work. (1.40-44) Top management refers not only to senior military/civilian leaders within the DOD but also to middle managers and first-level supervisors. Within the information management (IM) career field, this mid-level management responsibility falls to the junior and senior NCOs who on a day-to-day basis manage core activities related to information management under the direction of either company grade or field grade officers.

Information management as related to the IM career field includes several programs all of which are referenced in Air Force Regulation 4-1. (2) I have limited my research to

six major areas: publishing and systems management, correspondence handling procedures, documentation management, orders/travel processing and reprographics.

Information management not only refers to specific products that appear at the end of a production cycle but also to specific management processes that manage information, information which will be used throughout the organization be it a squadron, division, base, wing, etc. How effectively that information is managed will determine the quality of end products and that is where TQM enters the picture. TQM by its very nature is a process driven phenomena emphasizing quality and performance improvement. (3.42-45) Therefore, TQM may be able to provide the necessary framework for information managers to promote greater efficiency in the way they do business.

Chapter II reviews certain aspects of the TQM philosophy focusing primarily on TQM's intent and possible applications to IM activities. Chapter III examines the six IM areas referenced earlier and describes which of those areas through process analysis can best be evaluated using specific measurement criteria. Chapter IV considers additional TQM initiatives that may improve the effectiveness of information managers and workers alike. I'll conclude with a brief summary on what information managers need to do to assure that the information they manage is the right information, for the right people, at the right time.



## CHAPTER II

### TQM PHILOSOPHY

A significant portion of today's emphasis on TQM within the Department of Defense is rooted in the philosophy of one Mr. W. Edwards Deming. (4) Deming's management philosophy focuses on improving quality and is based upon two fundamental principles: process analysis through the use of statistics coupled with a democratization of the workplace. (5.84-87, 6.14) Still very much active today, Deming encourages management to not only change the way it looks at "quality" but also to reorient the workplace so quality is something built into the production process and not something added after the process is completed. (1.40-44)

How are these changes made? By providing training to all employees; by breaking down institutional barriers which act as roadblocks to productivity; by fostering teamwork among all employees; by knowing the customers and working to satisfy their needs and not the organization's; and perhaps more importantly, regardless of the business activity, striving for continuous improvement of products and services. (3.42-45) The first four are fairly direct and will be discussed in greater detail in Chapter IV. The last item--striving for continuous improvement--is crucial for the success of any organization and is at the heart of Deming's

theories. (7.33-35)

Deming believed that before quality improvements can be made, one must first understand the processes that influence the activity. (8.384-391, 9.17-22) Once that understanding is attained, then controls needed to prevent disruptions can be established. He also observed variation is an inherent part of any process and unless management can control that variation, the process and thus quality will suffer. (10. 43-46) Deming employed statistics as one way to understand the process(es) and to control variations. (11. 20-21) Process analysis provides management with "facts" not "assumptions" which management can then use to correct the problem in a more meaningful and constructive way. For example, as I indicated earlier, information managers manage not only the final product (i.e. publications, orders, records), they also manage the delivery process(es). Process analysis pinpoints where the process has broken down and allows the manager to correct the aberration and restore quality to the process. This aspect will be the focus of Chapter III as I analyze the various IM processes and the controls that may prove effective in managing them.

Over the past few years public and private sectors alike have taken notice of Mr. Deming's many successes and have attempted to incorporate his philosophy into their own decision-making mechanisms. (12.16-17) Public sector enterprises, although less reliant on the profit motive, still

have a product to provide a customer although that product may come in a variety of forms. For the government, that product is service to the people and its effectiveness is measured in terms of how well it uses the resources made available to it to deliver that service. The same applies to today's information managers.

For information managers throughout the Air Force the customers are the people they serve and their product is the information they manage. The quality and timeliness of the information they manage determines their effectiveness. Whether it's a publication being developed, an order being processed, or a new technology being introduced, if it's not accomplished right then the entire organization is affected.

How does one measure the way information is managed? By applying the same concept of process control as used by Deming in measuring quality in the private sector, today's information manager can develop meaningful measurement criteria to determine process effectiveness. The activities and functions that make up IM program areas are derived from a series of processes. Only through an understanding of each of these processes is the manager able to develop meaningful, measurable standards to judge performance. This will be the focus of the next chapter.

## CHAPTER III

### INFORMATION MANAGEMENT & TQM

Air Force Regulation 4-1, FUNCTIONS AND RESPONSIBILITIES OF INFORMATION MANAGEMENT (IM) ACTIVITIES, prescribes the functions and responsibilities for all IM activities. For the purposes of my analysis, some areas I've consolidated under one title, other areas I've divided even further and some I ignored. What I attempted to do was to concentrate on those areas an information manager most frequently encounters. With that in mind there are six program activities I'll address: publishing management, reprographics management, travel management, records management, information systems management and administrative communications. There exists within each of these program activities a number of functional responsibilities. For example, publishing management refers to not only the development of new publications and forms but also to the revision of those that already exist. Thus, within publishing management (the program activity) there are four functional responsibilities i.e. new publication development, new form development, publication revision and form revision. (2) Each functional responsibility requires several actions to be taken to achieve a desired outcome. Viewed together these individual actions represent a process. If a new regulation is

required, creating that regulation now becomes a process composed of a number of required actions. The same holds true for the five remaining program activities. Each activity has several functional responsibilities. These functional responsibilities in turn have their own processes to assure a given outcome. It's these processes the manager must somehow control.

Regardless of the function to be performed, there'll be a start date (the date a decision is made to take some kind of action) and an end date (the date action is completed). In between are the steps to be accomplished--the process. Once the process is defined, process performance and effectiveness can be measured by applying controls and standards. These controls and standards will be discussed next. Where specific action requirements are defined and time intervals assigned, these are examples only as situations may vary from organization to organization.

### PUBLISHING MANAGEMENT

Figure 1 lists the primary activity and associated functions pertaining to publishing management:(2)

+	ACTIVITY	FUNCTION(S)	+
+		+	+
+	Publishing Management	*New Publication Development	+
+		+	+
+		*Publication Revision	+
+		+	+
+		*New Form Development	+
+		+	+
+		*Form Revision	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+

Figure 1

For this particular activity, the product may vary (publication or form), but for each of the functions the actions to be taken will remain the same. Creating a new publication or form will follow the same procedures as will revising a publication or form. Once the actions that make up the function are defined and time intervals for each action assigned, a statistical base exists to measure process

effectiveness. In the case of a publication or form, required actions may be:

P(1) -> Initial Draft Submission

P(2) -> Initial Review

P(3) -> Revised Draft Prepared

P(4) -> Final Review

P(5) -> Submit For Final Publication

P(1) through P(5) represent the actions required to complete the function and therefore to complete the process. The next step is to assign time limitations for each action element. For example:

P(1) -> 1 day

P(2) -> 10 days

P(3) -> 3 days

P(4) -> 10 days

P(5) -> 3 days

Start date + 27 days (P(1) + ... P(5)) equals completion date. For any publication or form being published, take the start date and add 27 days to get the target date for publication. This target date can then be used as a measurement standard for the publishing process. "P" values may vary depending on organizational needs but they can be established using the format above. Reprographics management is next.

## REPROGRAPHICS MANAGEMENT

+	ACTIVITY	FUNCTION(S)	+
+	Reprographics Management	* Offset Press Operations	+
+		* Microfiche Processing	+
+		* Copy Center Management	+
+		* Document Publishing (Text & Graphics)	+
+		-- Composition, Edit, Technical Illustration	+
+			+
+			+
+			+
+			+

Figure 2

Unlike the publications area, each reprographics function represents not only a different product but also a different process with different actions required. (2) For example,

### Microfiche Processing: 3 step process

P(1) -> Work Order Receipt

P(2) -> Document Filming

P(3) -> File and/or Distribute



Offset Press Operations: 7 step process

- P(1) -> Work Order Receipt
- P(2) -> Negative Preparation
- P(3) -> Platemaking
- P(4) -> Printing
- P(5) -> Collating
- P(6) -> Binding
- P(7) -> Distribution

Copy Center Management: 3 step process

- P(1) -> Work Order Receipt
- P(2) -> Copy
- P(3) -> Distribution

Document Publishing: 3 step process for each of the sub-functions.

Text Material

- P(1) -> Document Receipt
- P(2) -> Edit Text
- P(3) -> Forward Edited Text to Composition

Graphics

- P(1) -> Document Receipt
- P(2) -> Illustrations Prepared
- P(3) -> Forward Illustrations to Composition

Composition

- P(1) -> Document Receipt (from edit/art)
- P(2) -> Merge Text & Graphics
- P(3) -> Forward for Printing

As in the publishing cycle, the next phase involves assigning time factors to each action for each function. For example,

Microfiche Processing:

P(1) -> 1 day

P(2) -> 7 days

P(3) -> 7 days

Offset Press Operations:

P(1) -> 1 day

P(2) -> 3 days

P(3) -> 3 days

P(4) -> 2 days

P(5) -> 2 days

P(6) -> 2 days

P(7) -> 1 day

Copy Center Management:

P(1) -> 1 day

P(2) -> 2 days

P(3) -> 1 day

Document Publishing:

Text

P(1) -> 1 day

P(2) -> 7 days

P(3) -> 1 day

#### Graphics

P(1) -> 1 day

P(2) -> 7 days

P(3) -> 1 day

#### Composition

P(1) -> 1 day

P(2) -> 7 days

P(3) -> 1 day

Start date + (P(1) + ... P(?)) equal's completion date. For microfiche processing, the measurement standard becomes start date plus 15 days; for offset press operations, start date plus 14 days; for copy center operations, start date plus 4 days; for document publishing, start date plus 18 days (text & graphics run simultaneously). One variable affecting the time factor determination would be page count of the document. Again, the manager can adjust "P" values to suit the needs of the organization and/or to accomodate any other variables that may impact the process. Next for consideration is travel management.

### TRAVEL MANAGEMENT

+ <i>ACTIVITY</i> <i>FUNCTION(S)</i> +	
+ + <i>Travel Management</i> + + + + + + + + + + + + +	+ + * <i>Orders Processing</i> + +     -- <i>Create</i> +     -- <i>Certify</i> +     -- <i>Authenticate</i> + + * <i>Travel Arrangements</i> + + + + + + +

Figure 3

For the majority of functions within the travel management activity, time requirements (in terms of action step completion) are fairly short and each of the functional processes involves a minimal number of steps. (2) In addition, for most organizations, orders are prepared by the individual offices. As the travel management function exists now, statistical measurements to rate performance probably have little to add. However, if the traditional approach to travel management was changed to a more centralized operation with the information manager assuming total responsibility

for all travel management activities for a large organization, then the same type of analysis as was done for the publishing and reprographics activities would also apply. Using the centralized model, required actions would be as follows:

Orders Processing: 5 step process

- P(1) -> Requirement Defined
- P(2) -> Orders Prepared
- P(3) -> Orders Certified
- P(4) -> Orders Authenticated
- P(5) -> Orders Distributed

Travel Arrangements: 4 step process

- P(1) -> Lodging Requirements Identified
- P(2) -> Lodging Requirements Confirmed
- P(3) -> Transportation Rqmts Identified
- P(4) -> Transportation Requirements Confirmed

With time factors assigned,

Orders Processing:

- P(1) -> 1 day
- P(2) -> 1 day
- P(3) -> 2 days
- P(4) -> 1 day
- P(5) -> 1 day

Travel Arrangements:

- P(1) -> 1 day (Day 1)
- P(2) -> 1 day (Day 2)
- P(3) -> 1 day (Day 1)

P(4) → 1 day (Day 2)

Based on the preceding information the travel management activity would be able to respond to normal programmed requirements in a measurable way. Some of the activities under travel arrangements would be accomplished simultaneously--that is all in one day--but by being able delineate required action steps and assign controllable time intervals, the information manager would be able to measure and control performance and hold that performance to prescribed standards. Centralized control of all orders related/travel activities would be possible especially as the IM function continues to expand its systems capabilities. Given the above, start date + {P(1) + ... P(?)}. equals completion date. For orders processing, the measurement standard becomes start date plus 6 days; for travel arrangements, start date plus 4 days. Again, "P" values would depend on how the manager wanted to structure the travel management activity to be most responsive to the organization's needs. The next area for consideration is administrative communications.

### ADMINISTRATIVE COMMUNICATIONS

+	ACTIVITY	FUNCTION(S)	+
+		+	+
+	<i>Admin Communications</i>	+ * <i>Correspondence Control</i>	+
+		+	+
+		+ -- <i>Collect</i>	+
+		+ -- <i>Sort</i>	+
+		+ -- <i>Deliver</i>	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+

Figure 4

The administrative communications' activity generally involves only 1 function: correspondence control.<sup>(2)</sup> Correspondence control is then further divided into: collect, sort, and deliver the mail. Mail refers both to electronic and regular.

#### Electronic Mail Handling Procedures: 3 step process

P(1) -> Receipt of Transmittal Request

P(2) -> Transmission of Data

P(3) -> Return Original Document

Correspondence for electronic mail should be prioritized in terms of how soon the information needs to be transmitted e.g. immediately, within 3 hours or within the duty day. Once time standards are determined, the actions are easily measured.

Immediate Handling (time constraint of 1 hour)

- P(1) -> Time of Receipt
- P(2) -> Transmission Within 1 Hour
- P(3) -> Return Original Document

Priority Handling (time constraint of 3 hours)

- P(1) -> Time of Receipt
- P(2) -> Transmission Within 3 Hours
- P(3) -> Return Original Document

Routine Handling (time constraint of 8 hours)

- P(1) -> Time of Receipt
- P(2) -> Transmission Within 8 Hours
- P(3) -> Return Original Document

For regular mail handling procedures, the following would apply:

Regular Handling Procedures: 3 step process

- P(1) -> Collect The Mail
- P(2) -> Sort The Mail
- P(3) -> Deliver The Mail



Time limitations would be:

P(1) -> 1 day (Day 1)

P(2) -> 1 day (Day 1)

P(3) -> 1 day (Day 2)

Collection and sorting would take place on the same day with the mail delivered the following day.

Summary: for electronic mail, receipt time + priority status (routine (8 hrs), priority (3 hrs), immediate (1 hr)) equal's transmittal standard. For regular mail, receipt time + 1 day equal's standard.

The next area to be considered is records management.

# RECORDS MANAGEMENT

+	ACTIVITY	FUNCTION(S)	+
+		+	+
+	<i>Records Management</i>	+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+

Figure 5

The records management area, unlike the activities reviewed earlier, has measurement standards in place which are established by either Air Force directives or federal statutes. (2) Information release programs--Freedom of Information and Privacy Act--are governed by federal law with specific performance standards clearly stated which can be used to manage the programs effectively. Much the same is true within the documentation area. Filing, maintenance, and disposition functions are directive in nature and are governed by Air Force regulations/manuals with specific procedures to

follow. In addition, the programs we previously discussed all lend themselves to centralized IM management and control. This is not true of the documentation functions, which are the responsibility of each office of record. These offices of record could number 10, 100, etc. for any given organization. There is a periodic inspection requirement but that too is determined by regulatory guidance. Given all of the above, it would be of limited value for the manager to set any additional performance parameters for the records management activity.

The final information management activity to review is systems management.

# SYSTEMS MANAGEMENT

+	ACTIVITY	FUNCTION(S)	+
+		+	+
+	Information Systems Mgt	+ * Systems Technologies	+
+		+	+
+		+ -- Ombudsman	+
+		+ -- Plans & Programs	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+
+		+	+

Figure 6

The systems management activity acts as the organization's ombudsman for information management's plans and programs. (2) There are no clearly defined process steps and as a result, measurement standards from a statistical standpoint would not apply.

So what does it all mean? What it means is that the majority of IM activities are process driven with clearly definable steps which can be measured. Through process analysis and the subsequent application of certain controls and standards, the information manager can determine whether

or not the organization's information needs are being satisfied in an effective and timely manner.

Process analysis provides us one means to measure performance. However, there's even a greater challenge awaiting today's information managers. Even though standards have been developed and set in motion, they still must be accepted. Chapter IV will address this issue along with some initiatives which may prove effective in gaining this acceptance.

## CHAPTER IV

### TQM SUPPORTING INITIATIVES

Process analysis provides the manager a means to measure and improve productivity. The steps discussed to this point provide the information manager a degree of control over the various processes. What process analysis does not do, however, is bring the employees themselves into the improvement process. To do this, changes in the workplace must take place, changes which I will review next.

Earlier in chapter II I referenced several initiatives management could undertake to improve the workplace. These included providing employee training; eliminating institutional barriers to productivity; creating a sense of teamwork among employees and finally, knowing and understanding the customer and his needs. All of these are relevant to today's information manager. Process analysis yields the necessary control measures; however, it's these initiatives that provide the acceptance mechanisms for those controls.

One of the more important areas for today's information manager is training. An effective training program will not only improve training capabilities but will also significantly enhance other areas of the organization. An effective training program will help breakdown institutional barriers which limit productivity; will instill a sense of

teamwork among all employees; and will lead to better satisfaction of the customer's needs.

Trained, experienced personnel are often in short supply and high demand. Without the proper training, quality customer-oriented results are almost impossible to obtain. In addition, the measurement indices discussed earlier would be of little if any value. How do you assure you have properly trained personnel when you as the IM have very little control over the personnel selection process? One way is to provide training and job assignment on a rotational basis to those personnel already assigned. Assuming the average time on station for military personnel will be four years, a rotational training program can be established for many of the IM activities. Instead of being assigned to one area and remaining in that one area for the entire tour, the information manager could move personnel through two or three of the core activities. For example, an individual could work in 1 area for 16 months (2 months training, 14 months work performance); move to a second area for the next 16 months with the same training/work performance break-out; and close with 16 months--same ratio--in a third area. This type of rotational training could be accomplished for the publishing management, records management, administrative communications, travel management and systems management activities. A job matrix or similar type mechanism could be developed for all enlisted personnel assigned (non-supervisory) indicating where

the people will be working and when. New people entering the organization could be added at time of arrival and the process explained during initial interview. Formalizing the rotational process in this manner commits the organization to follow through. Reprographics management is a large enough activity that a similar rotational training program could be used in that area alone.

This type of training program would do several things. First, it would create an expanded, experienced workforce without having to rely on additional personnel. Second, employee morale would be high. By providing additional training, the employee's perception of his value to the organization should be positively reinforced. By being trained in a variety of related activities, the individual employee has a better understanding of the overall mission of the organization. With this enhanced understanding comes improved job performance and increased customer satisfaction. Third, enlisted promotion potential is enhanced. Enlisted personnel within the organization become knowledgeable in several areas of their career field and are better prepared to compete under the weighted airman promotion system.

Training is one of the more important aspects of total quality management. There are, however, several additional initiatives available to a manager. Some of these include:



- decentralize/delegate decision making
- encourage employee attendance at professional seminars
- reward/recognize employees for accomplishments (in-house recognition programs, base level and/or higher)
- publicize IM activities/assistance availability (don't wait to be asked, take the lead in introducing the organization to IM capabilities)

There are probably many other initiatives which could be undertaken by today's information manager, the number being limited only by the imagination. The initiatives discussed above reinforce the statistical analyses earlier reviewed. However, neither can be nor should be considered separately.

## A FINAL NOTE

Total Quality Management represents a commitment to providing the very best product for the right customer at the time it's needed. Among TQM's guiding principles are: leadership must be involved in quality management; the organization must realize TQM represents a long term investment in what amounts to an organizational social change; quality refers both to people as well as process; and finally, TQM must be formalized throughout the organization to assure its permanency. In my DAS I reviewed a variety of ways TQM can be incorporated into information management activities to provide a starting point for effective performance measurement. The methods discussed can be adapted to almost any situation within the IM area but are by no means the only applications available. As today's information managers strive to meet tomorrow's information challenges, TQM will play an ever increasing role as those challenges are met.

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